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Family Medicine Home Visit Programs In U.S. and Canadian Medical Schools

Linda Z. Nieman, Ph.D., and James G. Jones, M.D.

Abstract—In this report, the authors describe the current status of home visit training programs in family medicine education in U.S. and Canadian medical schools. Thirty-two percent of the 137 medical schools with programs in family medicine provide opportunities for students to visit patients in their homes. In most of these schools, visits are mandatory, are made by one student, occur at more than one level of study, and require a written report by the student. Information gathered during the visit becomes part of the patient's medical record and is shared with health care providers. Physician participation in the visit is most frequently optional and an alternative to the participation of nonphysician faculty members or allied health professionals. Ninety-four percent of the respondents whose schools have programs report that students, faculty members, and patients have positive attitudes toward the visit. Suggestions for improving and/or designing home visit programs are provided based on the data accumulated during the study.

A review of the literature on the topic of home visits as a feature of medical practice in North America and Britain revealed that the decrease in house calls and a concomitant rise in the frequency of hospital and office visits have significantly altered the context in which the doctor-patient relationship now occurs (1–3). Writing about the house call's decline, Cauthen (3) notes that while many in the medical profession "celebrate" the end of a supposedly outdated feature of medical practice, others in the same profession demonstrate a renewed interest in revitalizing the home visit. This renewal of interest has had two results. First, guidelines have been written for making effective use of the house call (3–6). Second, McWhinney (7), Phillips (8), and Gray (9) have stated emphatically that it would be professionally and politically unwise for family physicians to eliminate the house call. They consider the home visit fundamental both to the principles of family medicine and to the public desire for personalized, good medical care.

Until recently it has been unclear how decreased house calls have affected family medicine education. Cognizant of the possible impact of the declining house call upon graduate family medicine education, Graham and Krick surveyed U.S. family medicine residency programs to determine the status of "family home assessment" within graduate education (10). Their results indicated that the

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house call still remained a standard part of residency training. Educators from 86 percent of the responding programs stated that their programs included home visits.

In contrast to the attention given house calls at the graduate level of family medicine education, little has been written concerning home visitation at the undergraduate medical education level. The purpose of this study is to describe home visit programs as a feature of family medicine education in U.S. and Canadian medical schools.

Methods

Home visit programs were defined as one or more visits made by medical students to the homes of designated patients in order to satisfy either explicit or implicit family medicine instructional objectives. For purposes of this study, the terms "house call" and "home visit" were considered synonymous. A 17-item questionnaire was developed by the authors in order to answer four major questions: Are home visits part of the programs of departments of family medicine? What is the characteristic structure and content of the programs? How are the programs evaluated, and what are the results of such evaluations? Are these home visits made part of actual patient care? Of the 17 items, three were designed to answer the first question, six to answer the second question, seven to answer the third question, and one to answer the fourth question. Sixteen items were forced-choice responses from which respondents selected the most appropriate answers to describe their programs. The final item, concerning evaluation of home visits, asked respondents to list program strengths and weaknesses.

The survey was mailed in the summer of 1982 to 138 "family practice contacts" identified from sources provided by the American Association of Family Practice and by the Canadian Board of Physicians. A total of 122 individuals represented U.S. schools, and 16 represented Canadian schools. All medical schools which were listed as having "no plans" for family medicine were omitted from the mailing. Of the 138 questionnaires, one was eliminated from the study because of an inaccurate address. Respondents returned 117 of the 137 surveys with valid addresses, producing a response rate of 85 percent. One additional survey which contained information concerning a residency program was eliminated, leaving 116 in the final sample.

Frequency distributions, percentages, and cross tabulations were the major quantitative procedures. An additional qualitative technique, which Krippendorf refers to as attribution analysis, was used to analyze data regarding perceptions of program strengths and weaknesses (11).

Results and Evaluation

Analysis of the returned surveys revealed that home visit programs were part of family medicine education in 37 (32 percent) of the responding medical schools. Of the schools with programs, six were Canadian and 31 were American schools, including one Puerto Rican school. An additional 10 percent of the responding schools previously had conducted home visits but no longer had the program. The major factors suggested by the respondents for the demise of home visits were a lack of funds, lack of faculty, and logistical constraints. Only one of the schools which had ended home visits listed the lack of appropriate patients and families as a cause of termination.

The remainder of this discussion summarizes information obtained from the 37 medical schools with existing home visit programs. Respondents from these medical schools answered several items regarding program structure, including

whether or not the program was mandatory, in which year or years of education the home visits occurred, and who participated when these visits were made. Sixty-five percent of the schools with programs had mandatory home visits. An additional 5 percent mandated home visits in one year and made them optional in other years.

Regarding the point at which students participate in the home visit program, more than 40 percent of the correspondents checked the first year of medical school and 40 percent designated the third year of medical school as the starting year. Eleven percent indicated that the program began during the second year, while only 8 percent stipulated a program beginning in the fourth year of study. In 70 percent of the schools, the programs were described as multiyear. Only 5 percent of the respondents reported that their programs occurred in all four years of medical education.

In schools which prescribed visits during the first year of study, home visits were part of the family medicine curriculum in one or more subsequent years. All respondents who designated beginning home visits during the first year also reported home visits during other years. Six percent of the 15 schools which began home visits in the third year continued visits during the students' fourth year of study. None of the schools which initiated programs in the students' second year continued home visits in subsequent years.

One assumption made prior to the study was that it was possible to emphasize, either intentionally or unintentionally, particular professional or peer relationships by stipulating that certain individuals or groups would make the visit. The following possibilities for participation were listed on the questionnaire: one student, two students, groups of more than two students, students and faculty physician, students and faculty nonphysician (including allied health personnel). Respondents checked all choices that applied to their programs and wrote in others that were not listed.

Figure 1 illustrates that the two most usual forms of the visit were (*a*) for a student to visit the family with a physician and (*b*) for one student to visit a family by himself. The physician's participation with the student usually was offered only as an alternative option to the participation of others, including students, nonphysician faculty, and allied health personnel. The student's visit by himself usually occurred as a mandatory type of visitation.

The questionnaire contained a list of words and phrases describing the content and skills taught during the home visit. When responding to these items, respondents checked an average of three words and phrases. Validating Pellegrino's statement that the family is the subject matter of family medicine (12), 78 percent of the respondents named the family as their home visit's central concept, while 48 percent named the impact of chronic illness as a major concept.

The frequencies for specific skills taught by means of the home visit programs are illustrated in Table 1. The skills are divided into three categories. Between 49 and 76 percent of the programs taught the first category of general skills. The second category consists of skills which, excepting analysis of nutritional resources, Smilkstein included in the analysis of resources available to the family (13). These skills were taught by 65 to 87 percent of the programs. Clinical skills were taught by 22 to 54 percent of the responding schools.

Since guidelines for undergraduate

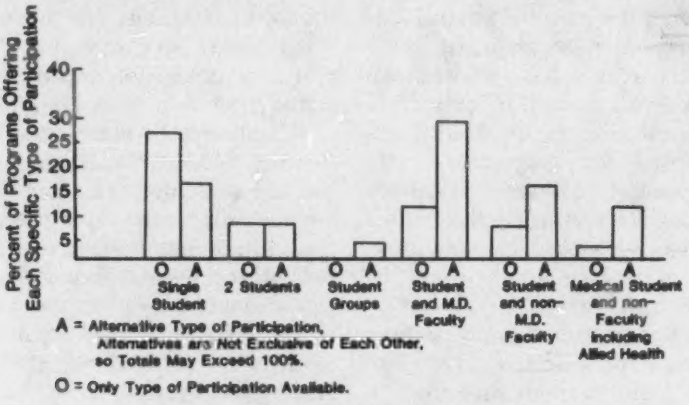

FIGURE 1
Participants in family medicine home visit programs in American medical schools.

TABLE 1
Skills Taught by Family Practice Departments in 37 American Medical Schools During Home Visit Experiences

Skills	No. of Departments
General	
Observation	28
Communication	19
Comforting ill and homebound	18
Analysis of family resources	
Social resources	32
Medical	31
Cultural resources	30
Educational	27
Nutritional	27
Religious	26
Economic	24
Medical	
Medical data-gathering	20
Analysis of health beliefs	19
Patient education	17
Analysis of previous medical visits	14
Developing a plan for preventive medicine	13
Assisting in prenatal/postnatal care	8
Conducting medical therapy	8

family medicine education usually specify that courses should be evaluated, four basic types of evaluations were listed on the questionnaire: evaluation of students, evaluation of the home visit program by students, program evaluation by the faculty, and a formal (written) evaluation of the program by patients. Eighty-six percent of the responding schools indicated that they used some form of evaluation. Further, 62 percent of those with evaluations reported that they used more than one type of evaluation.

Assessment of students occurred in 100 percent of the schools which incorporated an evaluation component into their home visit program. The most frequent form of student evaluation, occurring in 66 percent of these schools, was a faculty critique of the student's written report. The second most frequent form (35 percent) was an oral presentation by the student to faculty members. The least popular form, occurring in 6 percent of the schools, was a critique by faculty members of videotaped interviews conducted

by students in the patients' homes. Program assessment was conducted in 59 percent of the schools that evaluated their home visit. In all medical schools where program evaluation occurred, the students assessed the program. Faculty members made evaluations in 53 percent of the schools. Not a single school with a home visit program had patients to respond in writing to questions about the quality of the program.

The authors provided correspondents with a Likert-type scale and asked them to use the scale to summarize student, faculty, and family attitudes toward the visit. In the 10 schools where faculty members evaluated the program, respondents indicated that attitudes toward the home visit were either positive or very positive. One of the 19 schools that evaluated student attitudes toward the program reported negative evaluations. Ninety-four percent of the 37 schools, including those schools that did not report a formal evaluation component, reported positive attitudes toward the visit.

Three definite areas of weakness and three of strength emerged from analysis of the home visit programs. The three areas of program weakness, ranked in order of the frequency, were: insufficient program design due to the lack of goals and objectives, defined learning activities, and objective assessment measures; academic constraints placed upon the program, including the fact that the program was not mandatory and offered no credit; and logistics, especially insufficient physician involvement.

The program strengths were: the home visit as an opportunity to expand the student's concept of the doctor-patient relationship—that is, "medicine is more than what occurs in the office" and "more than pathology"; the home visit as a strategy for forming and/or strengthening professional and collaborative relationships with physicians, nonphysicians, and allied health personnel; and the home visit as a strategy for teaching psychosocial and family systems concepts.

A final area of concern was the degree to which the visit was applied to the medical care of participating patients. Of the schools with programs, 41 percent either placed information gathered by the student in the patient's medical record or provided it to the patient's physician who could use it in planning patient care. The information collected by the first-year student was as likely to be incorporated into patient care as was the information collected by the third-year student.

Conclusions and Implications

It appeared at one time that the home visit would become extinct. However, graduate family medicine education programs and a host of other influences have begun to change the deemphasis of the home visit, and the house call is becoming an accepted component of the armamentarium of the family physician.

At the same time there has been a renewed interest in the house call in graduate family medicine education, there has been an underutilization of the house call at the undergraduate medical education level, according to the results of the study reported here. This was true for both the United States and Canada. Existing programs varied considerably. However, the survey indicates several salient characteristics: (*a*) an almost equal tendency to utilize house calls as a preclinical or a clinical experience; (*b*) a purposeful development via program structure and content of the student-family relationships with almost no provision for a formal continuity relationship; (*c*) an apparent less purposeful development of other professional relationships, such as the relationship between the student and faculty physicians; (*d*) the provision for mul-

tiple formal program evaluations that do not include evaluations by the patient. The survey leaves unclear why programs begin and end when they do, why other interpersonal relationships are not specifically developed, and how respondents determined that patients' attitudes are positive.

Beyond their use in describing existing programs, the data from this study can be used to answer two closely related questions that have broad implications.

Is the house call a useful instructional experience for medical students? The results indicate that there is a high degree of conviction among family practice department leaders in the United States and Canada that current programs are useful experiences. Respondents noted that home visit programs are opportunities to learn particular skills and concepts as well as to encourage positive attitudes toward working with individuals and families.

What should an ideal home visit program include? The answer to the second question is developed primarily from the strong positive points of existing programs. An "ideal" program is a continuity experience that begins when a first-year student is assigned a family. Members of the family agree to participate in the educational programs and are aware that they are, in essence, teachers of medical students. Students visit the same family at home and in the physician's office several times over the four years of study. One major goal of the ideal program is to teach the student firsthand the principles of family medicine: family, community, continuity, comprehensiveness, and prevention. Findings made by the student during visits are recorded in the patient's record and shared in conferences with the providers, course directors, and family. These conferences are designed to improve family health and to develop the student's professional identity. An individual student makes some visits by himself and plans other visits as a collaborative effort with the medical faculty and/or allied health personnel. Program goals, objectives, and materials are specified in advance. When decisions are made to refine ideal programs, a complex of evaluations is systematically taken into account, including program evaluations by students, the faculty, and patient participants.

No such ideal program apparently exists. Nevertheless, the description is offered as a practical guide to family practice faculty members who contemplate either beginning home visits or improving an existing program. Given the renewed interest in the house call, the time may be appropriate for a forum at which the home visit would be discussed in detail and materials relating to the topic would be shared.

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Clinical Problem-Solving Skills of Internists Trained in the Problem-Oriented System

David Babbott, M.D., and William D. Halter

Abstract—In the study reported here, the authors test the hypothesis that internists completing residencies in a highly structured, problem-oriented residency program approach clinical problem-solving differently than do internists whose residencies were not problem-oriented. The vehicle for the study was the certifying examination of the American Board of Internal Medicine (ABIM) in 1978, 1979, and 1980. Performance on patient management problems (PMPs) and multiple-choice questions was analyzed for candidates for ABIM certification whose residency had been problem-oriented, for candidates whose residencies had been classified as nonproblem-oriented, and for the national pool of U.S. medical graduates. Internists trained in the problem-oriented residency program achieved significantly higher PMP scores than did the national pool in two of the three years and on true-false questions in one of the years. No differences were detected between the problem-oriented group and their nonproblem-oriented colleagues.

Numerous studies have been made in an attempt to determine relationships between physicians' prior educational experience and subsequent performance in practice or on standardized nationally administered examinations. In a 1981 report, Benson and colleagues analyzed test scores of three categories of candidates for certification by the American Board of Internal Medicine (ABIM): graduates of U.S. medical schools (USMGs), U.S. citizen graduates of foreign medical schools (USFMGs), and all other foreign medical school graduates (FMGs) (1). Pass rates of the USMGs taking the ABIM certifying examination for the first time were the highest, ranging from 79 to 82 percent, compared with 15 to 38 percent for the USFMGs and 27 to 45 percent for the FMGs. In every year of the study (1975–1980), the USFMGs achieved the lowest pass rate of the three categories of candidates.

In 1982 Gonnella and Veloski studied the impact of various types of first-year residency programs on scores achieved by graduates of Jefferson Medical College in Philadelphia, Pennsylvania, on Part III of the National Board of Medical Examiners (NBME) examinations (2). Correcting for earlier performance on Part II of the NBME examinations, they found that Jefferson graduates completing first-year residency positions in the specialties of pediatrics, surgery, obstetrics-gynecology,

The study on which this article was based was sponsored by the CIGNA Corporation through a grant to the National Fund for Medical Education.

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psychiatry, or pathology achieved lower NBME Part III scores than did colleagues completing the more broadly based flexible, family medicine, and internal medicine first-year residency programs.

Bell, working for the Rand Corporation under a U.S. Health Resources Administration contract, studied ABIM test scores of 438 graduates from nine U.S. medical schools taking the examination for the first time. He was seeking to determine and identify the magnitude of factors related to variation in ABIM scores (3). Bell stated that "quite significant differences were found in scores among the nine schools (but) a substantial amount of this difference is due to the quality of students admitted by the institutions." Looking at possible effects of internal medicine residency training on ABIM performance, Bell concluded, "No relationship was found between ABIM exam scores and postgraduate training. None of the available variables do a good job of differentiating among programs. The only distinctions are such crude ones as the type of hospital at which training was done (major teaching or limited teaching) and the type of internship (specialized or rotating). Further, the quality of postgraduate training is highly dependent on previous achievement, which makes it difficult to separate the effects of the two periods."

In 1968 the Medical Service of the Medical Center Hospital of Vermont in Burlington incorporated the problem-oriented medical record as the vehicle for documenting medical care on its clinical services. The problem-oriented system includes a defined data base, stipulates that all problems be identified and incorporated onto a problem list at the highest defensible degree of resolution, and requires that all progress notes be specifically coupled to problems on the problem list (4). In this manner, the clinicians' procedure in arriving at diagnostic and management plans is recorded. Thus, audits for thoroughness, analytic judgment, and efficiency of individual and team providers are made possible. Since the mid-1970s, audits have been incorporated into inpatient and ambulatory teaching in the Vermont residency program in internal medicine (5).

In 1978 the American Board of Internal Medicine first reported candidates' scores to program directors in terms of mean scores achieved by that program's former residents and the rank of the program relative to all programs expressed as a percentile. In 1978 the performance of candidates from the Vermont hospital on the patient management problem (PMP) section of the examination placed the Vermont program in the 66th percentile, in 1979 in the 85th percentile, and in 1980 in the 97th percentile. When these figures were reviewed, the question was raised as to a possible cause-effect relationship between the structured, problem-oriented emphasis of the Vermont residency program in internal medicine and successful performance of its graduates on the patient management problem section of the ABIM examination.

The study reported here extends Benson's and Bell's earlier studies and attempts to determine whether measurable relationships exist between the emphasis of the residency program on the problem-oriented system and performance on the multiple-choice questions (MCQs) and the patient management problem sections of the ABIM examination.

Methods

The American Board of Internal Medicine classifies medical residency programs as problem-oriented or nonproblem-oriented on the basis of: (*a*) the description of each program prepared by the program director for the ABIM and (*b*) the ABIM

site visitor's evaluation of the program based on discussion with the program director and a sample of residents and review of clinical records on the medical service. The Accreditation Council for Graduate Medical Education (ACGME) classifies hospitals as limited, graduate, or major affiliates of medical schools on the basis of information provided by deans of medical schools (6). The residency program in internal medicine at the Medical Center Hospital of Vermont is classified by the ABIM as problem-oriented and by the ACGME as a major affiliate of the University of Vermont College of Medicine. Among the 28 candidates for ABIM certification from the Medical Center Hospital of Vermont in 1978, 1979, and 1980, only three were graduates of the University of Vermont College of Medicine. The present study compared the test performances of residents from the Vermont program who took the ABIM certification test in 1978, 1979, and 1980 with a northeast pool and the national pool of candidates during this three-year period. The northeast pool consisted of residents from six hospitals in the northeast quadrant of the United States, each classified by the ACGME as a major affiliate and classified by the ABIM as nonproblem-oriented. The national pool was composed of all USMG candidates for certification during the period of 1978–1980, regardless of the status of medical school affiliation or the problem-oriented emphasis of their prior residency programs.

The American Board of Internal Medicine examination consists of three types of multiple-choice questions in addition to patient management problems. The former include the single-best-answer (Type A), matching questions (Type M), and multiple true-false (Type X) questions. The ABIM believes that the single-best-answer and matching questions tend to measure "aspects of clinical judgment, or the ability to synthesize data." Multiple true-false questions are believed to measure "aspects of knowledge." Patient management problems are designed to measure "aspects of clinical problem-solving" (7). Details of PMP construction and scoring are provided elsewhere (8). In order to ensure stability of standards from year to year, the ABIM utilizes a reference group which consists of graduates of U.S. and Canadian medical schools taking the certifying examination for the first time.

The initial portion of the present study focused on the MCQ and PMP performances of Vermont, northeast pool, and national pool candidates. Table 1 summarizes mean scores on multiple true-false questions achieved by the Vermont residents, the northeast pool, and the national pool. Table 2 provides comparable data for patient management problems for each of the three years. Data in both tables 1 and 2 were compared using anal-

TABLE 1

Performance on True-False Questions of Candidates for American Board of Internal Medicine Certification from the Medical Center Hospital of Vermont, the Northeast Pool, and the National Pool, 1978, 1979, and 1980

Year	Vermont Hospital			Northeast Pool*			National Pool		
	Mean†	S.D.	No.	Mean†	S.D.	No.	Mean†	S.D.	No.
1978	476.87	61.55	9	508.76	113.91	69	435.91	120.70	7,842
1979	495.98	116.51	10	526.01	101.91	103	425.94	135.26	7,523
1980	524.25	67.36	9	490.33	118.74	94	421.21	137.26	7,808

* Consists of residents from six affiliated hospitals in the northeastern United States.

† The mean for the reference group is 500, with a standard deviation of 100.

TABLE 2

Performance on Patient Management Problems of Candidates for American Board of Internal Medicine Certification from the Medical Center Hospital of Vermont, the Northeast Pool, and the National Pool, 1978, 1979, and 1980

Year	Vermont Hospital			Northeast Pool			National Pool		
	Mean*	S.D.	No.	Mean*	S.D.	No.	Mean*	S.D.	No.
1978	501.33	91.56	9	515.64	99.65	69	423.00	134.56	7,842
1979	530.91	81.14	10	502.92	103.88	103	421.87	140.96	7,523
1980	553.78	71.21	9	492.57	121.02	94	426.28	136.51	7,808

* The mean for the reference group is 500, with a standard deviation of 100.

yses of variance methods. Correlations between single-best-answer, matching, and multiple true-false questions and patient management problems for the three groups of candidates are summarized in Table 3.

The second portion of the study examined PMPs more closely. In this section of the study, 19 department of medicine faculty internists served as criterion groups to score PMPs and to evaluate Vermont and northeast pool candidates as they had actually worked through PMPs during their certification examinations in 1978, 1979, and 1980. Nine teams of ABIM-certified, full-time faculty members were recruited for this purpose. Each team consisted of one subspecialist in the discipline of the three PMPs reviewed by that team, one general internist, and the principal investigator (also a general internist) who served on each of the nine teams. Initially, each member individually worked through a PMP, selecting indicated options by erasure of an opaque overlay and avoiding those he felt to be noncontributory or deleterious to the management of the case. He next uncovered the overlay from each option he had not originally selected. Then, knowing all the options, he rated each on a scale of strongly indicated to strongly contraindicated, using the same guidelines as those followed by the ABIM criterion groups.

Next an effort was made to determine whether the Vermont faculty members could differentiate their former residents from residents of the northeast pool, as each group had actually worked through that PMP while taking the ABIM examination. Photocopies of the PMPs were prepared and coded to obscure the identity of the candidate and his prior residency program. Each faculty member evaluated 30 candidates' PMPs for the quality of the history options selected, the conduct of the physical examination, the

TABLE 3

Correlation Between Scores on Multiple-Choice Questions and Scores on Patient Management Problems of Candidates for American Board of Internal Medicine Certification from the Medical Center Hospital of Vermont, the Northeast Pool, and the National Pool, 1978, 1979, and 1980

Problems	1978	1979	1980
Vermont Hospital			
Type A—PMP*	.75	.72	.61
Type M—PMP†	.41	.65	.61
Type X—PMP‡	.26	.60	.28
Northeast Pool			
Type A—PMP*	.73	.64	.70
Type M—PMP†	.47	.42	.55
Type X—PMP‡	.68	.67	.73
National Pool			
Type A—PMP*	.77	.71	.74
Type M—PMP†	.61	.57	.64
Type X—PMP‡	.75	.74	.75

* Single-best-answer—patient management problems.

† Matching questions—patient management problems.

‡ Multiple true-false—patient management problems.

critical laboratory studies obtained, the dangerous and risky actions avoided, diagnostic acumen, management and patient instructions, and overall competence on the PMP. A 9-point scale was used; 7 to 9 represented excellence, 4 to 6 represented adequacy, and 1 to 3 represented inadequacy. To complete this task, 27 PMPs were studied and over 2,400 photocopies of PMPs were rated. Table 4 summarizes the Vermont faculty members' evaluations of Vermont and northeast pool PMPs. Mean ratings for each group were compared using *t*-tests.

Results

Table 1 reveals an apparent increase in the mean multiple true-false scores for the Vermont group over the three-year period. This trend, however, was not statistically significant. Additionally, no statistically significant trends were observed for the northeast pool, and there was no significant difference between the multiple true-false scores of the Vermont residents and the northeast pool. The national pool, on the other hand, did demonstrate a significant decline ($p < 0.05$) during the period of study, and the Vermont residents achieved significantly higher scores than the national pool in 1980 but not in the two previous years.

Table 2 shows that the Vermont residents' upward trend in performance on the patient management problems in 1978, 1979, and 1980 was not statistically

TABLE 4

Evaluation by Vermont Faculty Members of Performance on Patient Management Problems of Candidates for American Board of Internal Medicine Certification from the Medical Center Hospital of Vermont and the Northeast Pool, 1978, 1979, and 1980

Year/Problems	Vermont Hospital			Northeast Pool		
	Mean*	S.D.	No.	Mean*	S.D.	No.
1978						
History	6.301	.516	9	6.499	.808	20
Physical	6.750	.992	9	6.917	.843	20
Laboratory	6.070	.423	9	6.062	.371	20
Avoidance of risk	5.904	.464	9	6.157	.625	20
Diagnosis	6.289	.543	9	6.414	.481	20
Management	5.562	.416	9	5.528	.649	20
Overall	5.446	.431	9	5.506	.561	20
1979						
History	6.600	.640	10	6.472	.820	20
Physical	—	—	0	4.000	—	1
Laboratory	5.735	.562	10	5.667	.647	20
Avoidance of risk	6.860	.985	10	6.660	.848	20
Diagnosis	6.489	.963	10	6.433	.635	20
Management	5.847	.922	10	5.750	.717	20
Overall	5.755	.815	10	5.562	.685	20
1980						
History	6.556	.542	9	6.586	.654	20
Physical	6.800	.628	9	6.787	.709	20
Laboratory	6.396	.382	9	6.649	.361	20
Avoidance of risk	6.534	.657	9	6.324	.748	20
Diagnosis	6.562	.465	9	6.684	.421	20
Management	5.605	.577	9	5.356	.713	20
Overall	5.649	.524	9	5.466	.616	20

* A 9-point scale was used where 7 to 9 = excellence, 4 to 6 = adequacy, and 1 to 3 = inadequacy.

significant. Similarly, the northeast pool's decline in PMP performance over this period was not statistically significant, and the Vermont residents' scores on patient management problems did not differ significantly from the northeast pool scores in any of the three years. The Vermont group did achieve significantly higher PMP scores than the national pool in 1979 and 1980 ($p < 0.05$) but not in 1978.

Table 3 shows that the national pool demonstrated the most consistent year-to-year correlation between each of the types of MCQs and PMPs. In contrast, the Vermont group demonstrated the greatest annual inconsistencies in correlation between MCQ and PMP scores. In fact, the small sample sizes and the instability of relationships for the Vermont group minimized the utility of additional statistical comparisons between the Vermont MCQ-PMP relationship and that of the northeast or the national pool.

Table 4 discloses that the Vermont and northeast pool candidates received comparable evaluations by the Vermont faculty members and that interrater discrepancies were rather high for these small groups. It is not surprising, therefore, that *t*-test comparison of these groups revealed no significant differences in any of the seven categories evaluated.

Discussion

The earlier cited studies related undergraduate and/or graduate medical education background to subsequent overall performance on Part III of the NBME examinations or the ABIM certifying examination. In the study reported here, the authors analyzed ABIM test results in greater detail, seeking to determine more subtle differences than overall composite scores achieved by different groups of candidates for certification.

The method of analysis used did reveal significant differences between the Vermont-trained internists and the national pool in both aspects of problem-solving (1979 and 1980) and aspects of knowledge (1980). Despite the upward trend in the Vermont residents' PMP scores and the downward trend in PMP scores by the northeast pool, differences between these groups did not reach the level of statistical significance when performance was evaluated by ABIM test score analysis or by the Vermont faculty members. Scores on the examinations of the National Board of Medical Examiners were not available to enable further comparison between the Vermont residents and the northeast pool. The small size of the Vermont group may have contributed to the negative results of the latter analyses. It is evident that data from the study reported here do not enable conclusions concerning advantages or disadvantages of problem-oriented residency program emphasis. The use of blinded ABIM test scores for educational research and the methodology described in this article may prove useful to further research efforts seeking to correlate characteristics of undergraduate or graduate medical education with performance on the American Board of Internal Medicine certifying examinations.

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DATAGRAM

Financial Assistance for Medical Students, 1982–83

Each year the Association of American Medical Colleges (AAMC) collects, through the Liaison Committee on Medical Education Annual Questionnaire, data on financial assistance available to medical students. The following summary is the first of an annual series to be published in this journal.

The 1982–83 report contains several facts which are difficult to interpret. While costs of medical education continued to increase, fewer students received financial aid than in the previous year, and the total aid disbursed was also down. At the same time, schools indicated that a higher level of financial support was needed for their students. Apparently, many students chose to limit their debts in the face of rising costs and decreasing financial assistance by curtailing their expenditures, working, and using family or other sources of assistance unknown to the schools.

Table 1 portrays the financial assistance awarded to medical students from all sources known to the 118 schools reporting in academic year 1982–83. For comparison, identical information for the 1981–82 academic year is included. The most striking aspect of these data is that the total amount of financial assistance obtained by medical students declined $25.4 million, or 5.5 percent, in 1982–83 compared with the previous year. This drop is the only reduction since data on student financial assistance were first collected from the schools in 1954 and is in contrast to the increases in previous years, as shown in Table 2. Moreover, this decrease took place in a year when the estimated total first-year cost to the student for a medical education rose on the average of $2,293, or 14.4 percent, to $18,210 at private schools and $900, or 10.4 percent, to $9,588 for state residents at public schools.

The second notable trend reversal was the finding that 5,882 fewer students received financial aid (a drop from 78 to 67 percent of total enrollment). However, the number of students who applied for aid from the schools and who were determined by the schools to have financial need increased by 3,387, or 13.1 percent. The dollar amount which financial aid officers calculated to be needed by these students rose by $53.6 million, or 22.4 percent. The portion of the calculated need that was not provided for by financial aid grew by $16.5 million, or 65.1 percent, to $27.4 million.

The causes for the decline in the amount of student assistance and the number of aid recipients reported in 1982–83 are not clear. The idea that medical schools may be accepting more students able to pay their own way is contradicted by the relatively equal drop across all classes and not just for first- and/or second-year students. A likely explanation is that due to an increased appreciation of the implications of debt, students have become more prudent in borrowing or have turned to other sources of financial aid outside of the normal mechanisms handled through medical schools.

The principal sources of the drop in student assistance were the National Health Service Corps (NHSC) scholarships, down $15.2 million, or 39.3 percent, from the previous year, and the Guaranteed Student Loan (GSL) Program, down by $45.5 million, or 19.9 percent, from 1981–82. The fall in NHSC scholarships is due to the phaseout of the program, and there were virtually no new awards for the past two years. The decrease in total GSLs may have been influenced by a requirement, instituted in October 1981, that students with family incomes over $30,000 had to demonstrate financial need to be eligible to borrow. This requirement may have disqualified some students from obtaining these loans and, along with the proposal of the Reagan Administration that graduate and professional students be declared ineligible to participate in the program, discouraged others from applying. These circumstances may have diverted students to other resources, such as the program of parental loans to undergraduate students

TABLE 1

Sources of Medical Student Financial Assistance

Sources	1981–82 Total Amount	1981–82 Number	1981–82 Average Amount	1982–83 Total Amount	1982–83 Number	1982–83 Average Amount
Scholarships						
Administered by schools						
Exceptional financial need	$ 4,899,584	418	$11,721	$ 2,448,861	172	$14,238
Medical Scientist Training Program	7,726,685	710	10,882	7,910,675	662	11,950
School funds	27,180,407	11,418	2,380	30,759,501	13,297	2,313
Other scholarships	9,062,014	6,248	1,450	9,174,466	6,283	1,460
Subtotal	48,868,690			50,293,503		
Not administered by schools						
Armed Forces health professions	44,809,664	3,263	13,733	48,840,030	3,171	15,402
National Health Service Corps	38,720,764,	2,882	13,435	23,474,403	1,556	15,086
National medical fellowships	912,300	766	1,191	682,610	730	935
Other (with service commitment)	10,959,568	2,196	4,990	9,719,366	1,824	5,329
Subtotal	95,402,296			82,716,409		
Total Scholarships	144,270,986			133,009,912		
Loans						
Administered by schools						
Health professions loans	24,347,510	10,245	2,376	22,949,645	9,551	2,403
Guaranteed student loans	13,775,154	2,605	5,287	4,709,462	984	4,786
National direct student loans	12,737,413	7,216	1,765	14,909,736	8,057	1,851
Loans from school funds	9,624,746	6,283	1,531	16,822,076	7,495	2,244
Subtotal	60,484,823			59,390,919		
Not administered by schools						
Guaranteed student loans	214,923,028	43,809	4,905	178,536,448	37,624	4,745
Health education assistance loans	33,166,499	4,701	7,055	50,436,252	6,554	7,695
PLUS loans	2,004,325	752	2,665	11,256,451	3,930	2,864
Other loans	9,095,526	3,678	2,472	5,986,290	2,476	2,418
Subtotal	259,189,378			246,215,441		
Total loans	319,674,201			305,606,360		
College Work Study Program	1,482,911	1,274	1,163	1,401,763	1,092	1,284
Grand Total	465,428,098			440,018,035		

TABLE 2

Changes in Financial Aid to Medical Students, 1973–74—1982–83

Academic Year	Total Assistance	Increase/Decrease from Previous Year	
		Amount	Percent
1982–83	$440,018,035	−$25,410,063	−5.5
1981–82	465,428,098	+63,516,210	+15.8
1980–81	401,911,888	+63,867,301	+18.9
1979–80	338,044,587	+73,921,423	+28.0
1978–79	264,123,164	+57,734,014	+28.0
1977–78	206,389,150	+41,131,954	+24.9
1976–77	165,257,196	+16,471,317	+11.1
1975–76	148,785,879	+29,438,257	+24.7
1974–75	119,347,622	+29,940,286	+33.5
1973–74	89,407,336	—	—

(PLUS), that are available both to medical students and their parents.

Total funds in the scholarship category dropped $11.3 million, or 7.8 percent, from the previous year. After the $15.2 million reduction in NHSC scholarships, the greatest loss was $2.5 million in the Exceptional Financial Need Scholarship Program. Of the four scholarship sources showing gains, Armed Forces health professions scholarships led the way at $4.0 million.

Total loan funds awarded were $14.1 million, or 4.4 percent, less in 1982–83 than in 1981–82. Aside from the $45.5 million decrease in the GSL Program, the major loss was $3.1 million in "other loans" from sources outside the school. The greatest gains were: health education assistance loans (HEAL), $17.2 million; PLUS loans (which presumably went more often to parents than to students), $9.3 million; and school loans, $7.2 million. HEAL increased by only about 50 percent, compared with a more than 100 percent increase ($17.9 million) a year ago. This slowing of the HEAL growth rate suggests that some students opted for other sources of support rather than borrow from this relatively high-interest program.

The mean educational debts of senior students reported on the questionnaire increased 18.9 percent, from $20,116 to $23,914, compared with an 11.1 percent growth from $18,102 the previous year. These figures are supported by data provided by graduating seniors on the annual AAMC Graduation Questionnaire, which disclosed that debts for seniors went up 12.3 percent from $21,051 in 1981–82 to $23,647 in 1982–83. The number of students reporting educational debts of $30,000 or more increased 44.4 percent, from 1,504 to 2,172, or 13.5 percent of the graduating class.

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NOTE

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